AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior listings and versions:

1 to 20. (canceled).

21. (currently amended): The ~~transposon cassette~~ vector of claim 22 ~~19~~, wherein said first and second transposon inverted repeat sequences, and said transposase coding sequence are derived from *Tn*4001.

22. (currently amended): A vector comprising,

(a) a vector backbone comprising at least one polynucleotide sequence encoding light generating polypeptide sequences operably linked to a promoter functional in a target organism of interest and

(b) a transposon cassette ~~of claim 19~~ comprising a polynucleotide sequence comprising

an internal polynucleotide sequence, said internal polynucleotide sequence comprising (i) a first sequence of interest encoding at least one light generating polypeptide sequence, said first sequence present in a first orientation, capable of being expressed in a gram-positive target organism and lacking control sequences that are capable of promoting transcription in the target organism and (ii) a transposase coding sequence operably linked to a promoter functional in the target organism, wherein said transposase coding sequence is in a second orientation relative to polypeptide coding sequences of the first sequence of interest encoding polypeptide sequences, and said transposase is capable of inducing transposition mediated by transposon inverted repeats; and

first and second transposon inverted repeat sequences, wherein said first and second transposon inverted repeat sequences (i) are from a gram-positive bacterium; and (ii) flank said internal polynucleotide sequence;

wherein said promoter in said vector backbone does not affect transcription of any coding sequences in the transposon cassette.

23. (currently amended): ~~A~~ The vector of claim 22, wherein ~~comprising, (a) a transposon cassette of claim 19, and (b) a vector backbone,~~ said vector backbone further comprises ~~comprising~~ a transposase coding sequence operably linked to a promoter functional in the target organism, said transposase capable of inducing transposition mediated by said transposon

inverted repeats and wherein said promoter operably linked to said transposase coding sequence in said vector backbone does not affect transcription of any coding sequences in the transposon cassette.

24. (original): The vector of claim 22, said vector backbone comprising an origin of replication that is functional in a target host cell.

25. (original): The vector of claim 24, said vector backbone comprises a Gram-positive origin of replication.

26. (original): The vector of claim 25, wherein said Gram-positive origin of replication is conditional.

27. (original): The vector of claim 26, wherein said conditional Gram-positive origin of replication is temperature-sensitive.

28. (original): The vector of claim 24, wherein said vector backbone comprises a Gram-negative origin of replication.

29. (currently amended): The vector of claim 28, wherein said ~~conditional~~ Gram-negative origin of replication is conditional.

30. (original): The vector of claim 22, said vector backbone comprising an origin of replication that is functional in more than one target host cell.

31. (original): The vector of claim 30, wherein said origin of replication is functional in both Gram-negative and Gram-positive cells.

32. (original): The vector of claim 22, wherein said vector backbone further comprises a selectable marker sequence of interest operably linked to a promoter functional in a target organism, wherein said promoter does not affect transcription of any coding sequences in the transposon cassette.

33. (original): The vector of claim 32, wherein said selectable marker coding sequence is a polynucleotide sequence encoding a polypeptide conferring antibiotic resistance.

34. (canceled).

35. (currently amended): The vector of claim 22 ~~34~~, wherein said transposon cassette contains a polynucleotide sequence encoding light generating polypeptide sequences wherein light generating polypeptide produced from coding sequences within the transposon cassette produce bioluminescence of a characteristic first wavelength that is detectably different from a characteristic second wavelength of bioluminescence produced by the product of the polynucleotide sequence encoding light generating polypeptide sequences contained within the backbone vector.

36. (currently amended): The vector of claim 22 ~~34~~, wherein said polynucleotide sequence encoding light generating polypeptide sequences comprises a polynucleotide selected from the group consisting of: (a) a polynucleotide encoding *luxA,* and *luxB* gene products; (b) a polynucleotide encoding *luxA, luxB, luxC, luxD* and *luxE* gene products; (c) a polynucleotide encoding *luxY* gene product; and (d) a polynucleotide encoding *luc* gene product.

37. (currently amended): The vector of claim 22, wherein the vector backbone comprises: (i) a Gram-negative origin of replication; (ii) a Gram-positive origin of replication; and (iii) a selectable marker coding sequence operably linked to a promoter functional in the target organism, wherein said promoter operably linked to said selectable marker does not affect transcription of any coding sequences in the transposon cassette.

38. (original): The vector of claim 22, wherein said vector backbone is pAUL-A.

39 to 40. (canceled).

41. (original): The vector of claim 22, further comprising at least one transcription termination sequence in the vector backbone and adjacent the transposon cassette, such that said transcription termination sequence essentially prevents transcription originating from any promoter present in the vector from reading through into the transposon cassette sequences.

42. (original): The vector of claim 41, comprising two transcription termination sequences in the vector backbone wherein said transcription termination sequences flank the transposon cassette, such that said transcription termination sequences essentially prevent read-

through transcription originating from any promoter present in the vector into the transposon cassette sequences.

43 to 44. (canceled).

45. (original): A cell carrying the vector of claim 22.

46. (previously presented): A cell produced by a method comprising the steps of
transforming said cell with the vector of claim 22; and
culturing the transformed cell under conditions that facilitate transposition of the transposon cassette from the vector into the genome of said cell.

47 to 58. (canceled).

59. (original): The vector of claim 33, wherein said selectable marker coding sequence is a polynucleotide sequence encoding a polypeptide conferring antibiotic resistance, said antibiotic being selected form the group consisting of actinomycin, ampicillin, chloramphenicol, erythromycin, gentamycin sulfate, hygromycin, kanamycin, neomycin, penicillin, polymixin B sulfate and streptomycin sulfate.